

Abstract of the Invention:

A composite thermal protection structure, for applications such as atmospheric re-entry vehicles, that can withstand temperatures as high as 3600 °F. The structure includes an exposed surface cap having a specially formulated coating, an insulator base adjacent to the cap with another specially formulated coating, and one or more pins that extend from the cap through the insulator base to tie the cap and base together, through ceramic bonding and mechanical attachment. The cap and insulator base have corresponding depressions and projections that mate and allow for differences in thermal expansion of the cap and base.